

the proper and unique condition of hypnotism, which manifests itself under the different forms of exaggerated muscular tonicity, according to the duration and intensity of the stimuli which call it into activity.

2. In the hypnotic state for the suspension of the activity of the voluntary centres of consciousness, the whole cerebro-spinal axis is found in a state of exaggerated excitability, by which through the action of suitable stimuli there are easily produced hallucinations, suggestions, et cætera, in the sensory and psychical centres, and in the motor centres above-mentioned, manifestations of augmented muscular tonicity.

3. In the special phenomena which accompany the cataleptic state of hypnotism, as the slowing and suspension of respiration, the want of reaction of the muscles to all magnets, and the cessation of speech, they are very probably due to the weak contracture of the respiratory and voice-muscles, just as it exists in the other muscles.

4. The narrowing of the peripheral vessels which is seen in the passage from the phase of lethargy to that of catalepsy, is certainly the effect of a vascular reflex, produced by the stimulus which causes the passage from one state into another. This vascular reflex is analogous to that normally produced by external irritants. The dilatation of the vessels in the state of lethargy is due to the reëstablishment of the circulatory equilibrium.—*Rivista sperimentale di freniatria e di medicina legale*. Anno viii, Fasc. iv.

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CIRCULATION IN THE EYE.—Dr. M. W. Af. Schulten has made experiments upon this subject in the Physiological Laboratory at Leipsic. He had an ingenious opthalmoscope which magnified the background of the eye thirty to fifty times, and an improved bulbous manometer. His results were as follows: 1. The elastic distensibility of the bulb is relatively great when small degrees of pressure are employed, but when increased to thirty or forty millimetres Hg. it is almost = 0.2. 2. The amount of blood in the eye is directly dependent on the pressure in its blood-vessels. 3. Every increase of this pressure, whether induced by increased supply or venous impediment produces hyperæmia. 4. Every decrease of blood-pressure (ligature of the carotid, venesection, or debility of the heart) immediately produces anæmia of the eye. 5. The blood-vessels of the eye are subject to the influence of vaso-motor nerves which are partially conducted by the cervical sympathetic, and probably partially by the trifacial. 6. Notwithstanding the marked changes in the contents of the blood-vessels of the eye, the calibre and appearance of the same, especially the arteries as far as they can be observed in the retina and choroid, are little changed. The tonus of the vessels, however, is plainly indicated by changes in the diameter of both arteries and veins. From these results the general conclusions are drawn:—that the circulation in the eye is subject to the same laws as everywhere, with the

difference due to the anatomical construction of the eye ; that with increased pressure the decreasing distensibility of the sclera opposes every sudden and marked increase of the blood, and moderates the deleterious action that strong currents of that fluid could produce in this delicate organ. The course of the retinal vessels through the optic nerve and the oblique course of the choroidal veins through the sclera probably serve to stay the otherwise too rapid exit of the blood from the eye. He also investigated the circulation of the brain principally by determining the intercranial pressure, and measurement of velocity and inter-arterial pressure, and found the results analogous to those about the circulation in the eye. The dependence of the circulation in the eye on that of the brain is expressed by the following sentences :

1. Collateral hyperæmia of the brain is accompanied by the same in the eye, and manifests itself by increased intra-ocular pressure and slight dilatation of the blood-vessels of the retina and choroid.
2. A passive (venous) hyperæmia induces the same of the eye only when the venous obstruction is central in the vena jugularis, or especially when in the thorax.
3. Decreased arterial supply gives rise to marked anæmia in the eye and decreased intra-ocular pressure. By injecting one-half per cent. solution of chloride of sodium into the subarachnoidal sac with constant pressure, when the intracranial pressure rises to forty to sixty mm. Hg., a characteristic picture will appear in the eye. The excavation of the disc is increased as its floor is pressed forward (choked disc). These facts are thought to be entirely in accordance with affections of the brain in which an abnormal quantity of fluid has accumulated in the ventricles. Brain-tumor influences the circulation only when it is complicated with exudation into the subarachnoidal space. The cause of the intra-ocular appearances, of which the most marked is choked disc, is the necessary encroachment of the cerebro-spinal fluid into the intervaginal spaces of the optic nerve, and the resultant compression of the vasa centralis retinae which was also produced experimentally. By concussion of the brain, as by a padded hammer, the intra-ocular pressure exhibits an increase contemporary with that in the brain, but quickly falls below normal, as soon as the blood-pressure has fallen. On further blows it falls more, the intra-ocular blood-vessels show diminished distension and become smaller. The cause of these phenomena is irritation of the medulla oblongata. The certain and the only means of diagnosis between compression and concussion is by means of the ophthalmoscope.—*The Weekly Medical Review*, vol. vii, No. 10.

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THE SUMMATION OF IRRITANTS ON THE VASO-MOTOR CENTRE.  
 —Kronecker and Nicolaides have made experiments upon the main vaso-motor centre by means of electrical irritations. They used narcotized dogs whose medulla oblongata was severed from the brain above the vaso-motor centre. The animals were curarized, and artificial respiration was kept up. Their conclusions are as follows :